

**Results:** Significant reduction in lumen contamination; enhanced patient satisfaction. No contaminations since February 2012.

**Discussion:** Ongoing review and process improvements needed. In 2013 - mandatory review of TAC/CSA process in skills lab; new TAC/CSA competency required for all BMT staff within 3 months of hire.

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### Improvement in Early Recognition of Deteriorating Pediatric Bone Marrow Transplant Patients

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**Background:** Hematopoietic stem cell transplant (HSCT) is a curative treatment for children with a variety of malignant and non-malignant disorders. Approximately 100 stem cell transplants are performed at Texas Children's Hospital annually. HSCT is associated with a high rate of treatment-related complications. Some of these complications can lead to a sudden deterioration of the patient on the bone marrow transplant (BMT) unit. Early recognition of these patients could improve outcomes when codes and intubation on the BMT unit can be avoided. In 2010, 18 rapid response team (RRT) calls and three codes were called on the BMT unit.

**Purpose:** The purpose of this quality improvement project was to reduce the number of codes on the BMT unit to zero by implementing the Pediatric Advance Warning Scoring system (PAWS) and the BMT PAWS algorithm for early recognition of the deteriorating BMT patient.

**Methods:** Quality improvement techniques, such as Plan, Do, Study, Act (PDSA) cycles were used to plan, implement and evaluate this quality improvement initiative. During the first PDSA cycle, the current hospital PAWS scoring and algorithm tools were reviewed; a BMT specific PAWS algorithm was developed; and an educational offering piloted. The educational offering consisted of six case scenarios reflective of the BMT patient population. The second PDSA cycle included finalizing and initiating training of BMT staff, launching the program and monthly monitoring of compliance with the scoring tool and algorithm. Subsequent PDSA cycles included monitoring compliance with use of the tools, debriefings with staff after RRTs and sharing outcomes with others throughout the BMT program and institution.

**Outcomes:** The PAWS scoring tool and algorithm accurately reflected deteriorating BMT patients based on the initial pilot with 14 staff members of the BMT multidisciplinary team. The revised educational offering was piloted with 8 charge nurses who all passed the post-test. All multidisciplinary staff that attended the mandatory inservice met the post-test passing score of 80%. Monthly compliance monitoring of the inpatient charts revealed an average compliance rate of 85% by bedside nurses. RRT debriefings revealed multiple opportunities for improvement by various team members. Improvement opportunities included scoring accuracy, documentation of compliance with algorithm interventions and engagement by medical staff. Over time, documentation of events leading to RRTs was improved by the nursing staff.

**Conclusions:** The PAWS scoring tool and algorithm accurately reflected the deteriorating BMT patient. Twenty-five RRTs were called for deteriorating BMT patients during the

11 month period following implementation of the program. Thirteen (52%) of the RRTs called resulted in patient transfers to the pediatric intensive care unit. During this same time period no codes were called on the BMT unit.

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### Impact of Specialty Nursing Model On Pediatric Bone Marrow Transplant Patient Outcomes

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**Background:** Bone Marrow Transplant (BMT) is an aggressive therapeutic option for many non-malignant diseases. Specialized nursing care is crucial to prevent and manage expected and unexpected toxicities and has been recommended by many experts in the field. Little evidence is available to support this model of care. This retrospective study aims to investigate the impact of a specialized nursing model on adverse events, ICU transfers, length of stay and other incidents within this highly complicated and critically ill population.

**Objectives:** Retrospective study to investigate the impact of a specialized nursing model on ICU transfers, length of stay and reportable incidents in the pediatric transplant population.

**Methods:** All records of transplant patients from January 2008 to October 2012 were retrospectively reviewed for length of stay, PICU transfers and reported incidents. The specialty BMT nurses went through an initial orientation period of 16 weeks with an experienced preceptor. Didactic was given in modules focused on all phases of the transplant process. The nurses were required to complete an exam at the end of the orientation period. Nurses also attended an annual BMT retreat aimed at continuing education and practice review.

**Results:** Median length of stay decreased with implementation of specialty nursing. Median LOS from 2008-2009 was 35-40 days respectively. Median LOS from 2010-2012 was 28-30 days. ICU transfers significantly decreased and are depicted in Figure 1. Reportable incident rates remained between 58-60%.

**Discussion:** Based on findings from our study, the specialty nursing model impacts overall LOS and PICU transfers. Reportable incidents remained the same, however could be attributed to an institutional initiative related to safety and hypervigilant documentation by specialized nurses. Further research is needed to describe the specialty nursing model and overall impact on care for this unique population.

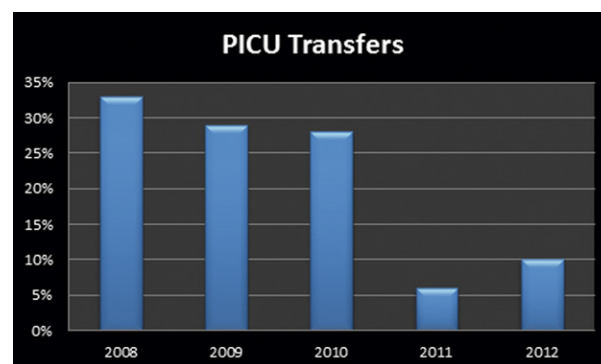


Figure 1.